

Program Outcomes and Course Outcomes

Department of Chemistry

Program Outcomes

PO 1: Students will be capable of demonstrating comprehensive knowledge and understanding both theoretical and practical in all disciplines of Chemistry.

PO 2: Students can solve their subjective problems very methodically, independently and finally draw a logical conclusion.

PO3: Students can develop critical thinking and to design, carry out, record and analyze the results of chemical reactions.

PO 4: Students will able to get good laboratory practice with proper safety.

PO 5: Students can find out the green route for chemical reaction for sustainable development.

PO 6: Students will be capable of applying modern technologies, handling advanced instruments and Chemistry related soft-wares for chemical analysis, characterization of materials and in separation technology.

PO 7: Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.

PO 8: To prepare the students for a successful career in industry and to motivate them for higher education and take up research as a career.

PO 9: To develop an opportunity to work in interdisciplinary groups.

Course Outcomes

Generic Elective Course in Chemistry (CBCS)

Semester	Course code	Course Outcomes
SEM 1	CC1/GE1	CO1: Get an idea about the kinetic theory of gases and real gases, liquid state of matter, chemical kinetics. CO2: Understand the basic concept of atomic structure, chemical periodicity and acids and bases. CO3: Students will learn the fundamentals of organic chemistry, stereochemistry, mechanism and examples of nucleophilic substitution reaction and elimination reaction CO4: Study experimentally the quantitative estimation of some compounds and ions in a solution by using iodometric titration, permanganate titration and dichromate titration.

SEM 2	CC2/GE2	<p>CO1: Understand thermodynamics and its application, chemical equilibrium, solutions, phase equilibria and solids..</p> <p>CO2: Get an idea about synthesis, properties and reactions of Aliphatic Hydrocarbons</p> <p>CO3: Know the error analysis and computer applications.</p> <p>CO4: Students will learn the various types of redox reactions and their applications</p> <p>CO5: Study experimentally how to determine viscosity of unknown liquid, surface tension of a liquid, kinetics of some reactions and solubility of sparingly soluble salt.</p>
Semester	Course code	Course outcomes
SEM-3	CC3/GE3	<p>CO1: Understand chemical bonding and molecular structure, p-block elements, transition Elements and co-ordination Chemistry.</p> <p>CO2: Students will learn the synthesis and properties of aromatic hydrocarbons, organometallic compounds and aryl halides.</p> <p>CO3: Get an idea about electrochemistry and its application.</p> <p>CO4: Study practically the qualitative detection of known and unknown radicals in a mixture.</p>
	SEC (A)	<p>SEC-1: Basic Analytical Chemistry</p> <p>CO1: Learn about analytical chemistry, sampling, accuracy and precision, sources of errors in analytical measurements.</p> <p>CO2: Understand about the analysis of soil, cosmetics, water and food products.</p> <p>CO3: Get a basic idea about chromatography and ion-exchange phenomenon.</p> <p>CO4: Application of instrumental techniques in food & beverage, medicines etc</p> <p>SEC-2: Analytical clinical biochemistry</p> <p>CO1: Students will get knowledge about the preparation, structures, reactions and biological importance of carbohydrates, proteins, enzymes, lipids and lipoproteins.</p> <p>CO2: Get an idea about the biochemistry of different diseases through a diagnostic approach by blood and urine analysis.</p> <p>CO3: Understand about the structure and nature of intermediates like carbocations, carboanions, radicals and carbenes.</p> <p>CO4: Helps students to develop laboratory training to use melting point and boiling point apparatus.</p>
SEM-4	CC4/GE4	<p>CO1: Students will learn the preparation, properties, chemical reactions of Alcohols, Phenols, Ethers, Carbonyl Compounds, Amines, Diazonium Salts, Amino Acids and Carbohydrates.</p> <p>CO2: Get a basic knowledge about Crystal Field Theory.</p> <p>CO3: Develop fundamental concept of Quantum Chemistry and Spectroscopy.</p> <p>CO4: Study experimentally the qualitative analysis of known and unknown single solid organic compounds and identification of a pure organic compound.</p>

	SEC-B	<p>SEC-3. Pharmaceuticals Chemistry CO1: To know about the drug discovery, design and development of representative drugs of the following classes: Analgesics, Antipyretic, Anti-inflammatory, Anti-bacterial, Antifungal, Antiviral, Antibiotics etc CO2: To understand about aerobic and anaerobic fermentation.</p> <p>SEC-4. Pesticide Chemistry CO1: Students will learn the preparation, structures, properties, reactions, benefits and adverse effects of representative pesticide of the following classes: Organochlorines, Organophosphates, Carbamates, Quinones.</p>
SEM-5	DSE	<p>DSE A-1. Novel Inorganic Solids CO1: Get an idea about the synthetic modification of different industrially important inorganic solids, synthesis of nano material, polymers etc. CO2: Students will learn how to synthesize hydro-gel by co-precipitation method and silver and gold nanoparticles. CO3: Study experimentally how to determine ions by cation exchange method and total difference of solids in a composite material.</p> <p>DSE A-2: Inorganic materials of industrial importance CO1: Learn about the synthetic procedure and use of different commercially important materials like silicates, fertilizers, alloys, catalysts, surface coating materials and batteries. CO2: Understand the general principles, properties, classification, industrial use, deactivation and regeneration of catalysis. CO3: Know about the preparation and explosive properties of lead azide, PETN, RDX and the basic idea of rocket propellant. CO4: Students will learn experimentally how to analyze the composition of dolomite, composition of percentage of metals in alloy, electroless metallic coatings on ceramic and plastic. CO5: Determine experimentally free acidity in ammonium sulphate fertilizer, estimation of Calcium in Calcium ammonium nitrate fertilizer and phosphoric acid in superphosphate fertilizer.</p>
SEM-6	DSE-B	<p>DSE B-1: Green Chemistry and Chemistry of Natural Products CO1: Discuss about the green chemistry and green synthesis the future trends of green chemistry for sustainability. CO2: Students will get an idea about the synthesis, psychological properties, isolation medicinal importance and other synthetic use of terpenes and alkaloids CO3: Study experimentally how to perform green synthesis of a number of organic compounds in the laboratory.</p> <p>DSE B-2: Analytical Methods in Chemistry CO 1. Learn about different analytical methods (Flame Atomic Absorption and Emission Spectrometry, Thermogravimetry) to identify and separate the products formed during different chemical transformations. CO2: Understand the fundamental laws of spectroscopy and selection</p>

		<p>rules.</p> <p>CO3: Students will learn the methods of separation of stereoisomers by spectral, chemical and chromatographic data analysis (IC, GLC, GPC, TLC and HPLC).</p> <p>CO4: Study experimentally how to separate and identify a mixture of monosaccharides by chromatography method.</p> <p>CO5: Evaluate the pK_a values of an indicator, COD and BOD using spectrophotometry.</p>
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